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DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION.

PRELIMINARY CIRCULAR

RESPECTING THE

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EXHIBITION OF EDUCATION

AT THE

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WORLD'S INDUSTRIAL AND COTTON CENTENNIAL EXPOSITION.

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WASHINGTON:
GOVERNMENT PRINTING OFFICE
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WORLD'S INDUSTRIAL AND COTTON CENTENNIAL EXPOSITION.

DEPARTMENT OF THE INTERIOR, BUREAU OF EDUCATION,
Washington, D. C., May 14, 1884.

The exhibition of the conditions of education and of the improvements in the application of its principles and methods has been found to be one of the most effective aids in its recent rapid advancement. An international exhibition at the present time which does not make education prominent is a misrepresentation. The World's Industrial and Cotton Centennial Exposition, to be opened in New Orleans December 1, 1884, has recognized this truth, and offers educators of all nationalities an opportunity to illustrate the work done by them, the improvement of educational appliances and conditions, and the relation of education to the progress of mankind in industry, commerce, and all other pursuits of civilized life. The managers of the exposition have not only provided for but require that unity of exhibition which educators have desired in other world's fairs, but have not been able to secure. They have shown by their treatment of education in their preliminary announcements, by their invitations to educators, and by their appeals to this Office for its coöperation, that they reckon the improvement of schools and the promotion of general culture as among the most beneficial results to be attained by their efforts.

The educators of the United States are alive to the importance of this opportunity. The Department of Superintendence of the National Educational Association, at its meeting in February last, appointed a committee, consisting of Hon. G. J. Orr, State school commissioner, Georgia; Hon. H. Clay Armstrong, State superintendent of education, Alabama; Hon. W. O. Rogers, superintendent of schools, New Orleans, La.; Hon. Aaron Gove, superintendent of schools, Denver, Colo.; Hon. J. H. Smart, president of Purdue University, La Fayette, Ind.; Hon. T. W. Bicknell, Boston, Mass., president of the National Educational Association; and Hon. B. L. Butcher, State superintendent of free schools, West Virginia, and president of the Department of Superintendence, to coöperate with this Office in preparing for the exhibition of the education of the United States. It is expected that this committee will meet for conference on details of plans as soon as circumstances warrant and extended announcement will then be made. On account of present impatient demands for information and a growing desire to begin the preparation of exhibits during this school year (ending June next), this Office publishes, as the first available official information since the general announcement, the accompanying communication of the Director-General of the Exposition, Maj. E. A. Burke, to the President of the United States, forwarded by him to Congress on the 6th instant, and also the list of subjects embraced in the general announcement under "Group 8: Education and Instruction, Apparatus and Processes of the Liberal Arts." Since the transmittal of Major Burke's report to Congress that body has passed a bill making a loan of \$1,000,000 to the managers of the Exposition; and the National Government has shown further interest in the success of the enterprise through the action of the President, who has issued an order for the participation in it of the Executive Departments, the Department of Agriculture, the Bureau of Education, and the Smithsonian Institution.

It may be suggested to those preparing educational material for earlier exhibitions, such as that connected with the meeting of the National Educational Association at

Madison, Wis., and those to be held in Missouri, North Carolina, and elsewhere, that they prepare their exhibits so that they may also be included in the exhibition of education at New Orleans.

It may be further noted that the Department of Superintendence, at its meeting already referred to, considered favorably the holding of a winter meeting at New Orleans during the continuance of the exposition. It appointed a committee, consisting of Hon. M. A. Newell, State superintendent of public instruction, Maryland; Hon. W. T. Harris, LL. D., Concord, Mass.; William H. Payne, A. M., professor of the science and art of teaching, University of Michigan; Hon. Le Roy D. Brown, State commissioner of common schools, Ohio; and Hon. A. Coward, State superintendent of common schools, South Carolina, to consider the organization of a permanent and international council of education, as proposed by prominent European educators. It may seem to them expedient to effect the organization of such a council, or congress, at New Orleans the coming winter.

JOHN EATON,
Commissioner.

REPORT OF E. A. BURKE, DIRECTOR-GENERAL OF THE WORLD'S INDUSTRIAL AND COTTON CENTENNIAL EXPOSITION, TO THE PRESIDENT OF THE UNITED STATES.

NEW ORLEANS, April 19, 1884.

To the President :

In behalf of the board of management of the World's Industrial and Cotton Centennial Exposition, created under act of Congress approved February 10, 1883, I have the honor to submit the following condensed statement of the operations of said board and observations touching the progress of the National and International Exposition provided for by the act. Congress required that the city named as the location for the exposition should subscribe to the amount of \$500,000. In addition to compliance with this requirement the city of New Orleans, in its corporate capacity, has donated the use of its principal park, containing 247 acres of ground, and has appropriated \$100,000.

The governor of Louisiana will recommend a liberal appropriation by the legislature of the State, which will assemble in May. Finding the sums thus provided inadequate to meet the demands for space from foreign countries, from the States and Territories, and from individual exhibitors throughout this and other countries, the board of management have called upon the citizens to increase their subscriptions to \$1,000,000, and under this call additional sums are being subscribed from week to week. The plans of the management have been in strict conformity to the act of Congress. Plans for the main building were opened to general competition.

The building is handsome and commodious, being 1,375 feet in length and 905 feet in width, affording 1,656,300 square feet of floor space, with convenient apartments attached for police, fire department, public comfort, offices, meeting rooms for various national organizations, and with a central music hall capable of seating 11,000 persons, and a machinery hall 1,375 feet in length by 250 feet in width. The main building covers 32 acres of ground. Two hundred and fifty thousand square feet of space have been reserved in the centre of the building for foreign Governments, and an equal amount for the United States Government and collective exhibits of the States and Territories.

The applications for space from foreign and United States exhibitors, eight months before the opening of the exposition, call for about 900,000 feet of exhibiting space. Hence, although this exhibition building is the largest ever erected, it is found inadequate to meet the demands.

Eleven foreign Governments have indicated their intention to participate, and I have been informed that many others have only delayed official action awaiting information as to the progress of the preparation and importance of the event. Thirty-two States and Territories have applied for space, and I am informed that the delay in other States is due to the time of assembling of their respective legislatures and to the fact that in some cases no session of the general assembly can be held until after the date fixed for the opening of the exposition. In many of such places the people of the respective counties are perfecting local organizations and raising the funds to secure a display of the resources of their State by local contribution.

The horticultural hall is said to be the largest conservatory ever erected. It is 600 feet in length, 194 feet in centre, with glass roof, a glass tower 90 feet in height, cold storage attachment for preserving fruit, and with heating apparatus. It is designed

to have an international exhibition of plants and shrubbery arranged around the sides of this building under cover and an international display of fruits extending throughout the central spaces of the building.

Mexico has consented to adorn the main centre with royal palms and choice plants from that country. The largest fruit display heretofore made was 11,000 plates. We are assured of an exhibit of 20,000 plates. A liberal premium list has been made in money and medals.

Adjoining the horticultural hall Mexico will occupy 200,000 feet of space for a garden. The Republics of Central America will occupy 250,000 feet of garden space adjoining, and an equal amount will be embellished by Florida and California. Choice grounds adjoining the conservatory have been reserved for the United States Departments and foreign horticulturists.

Provision has been made for an art gallery, to be composed of marble and stone from the quarries of the respective States and Territories and from such foreign countries as see proper to contribute specimens, but I regret to say that the means now at our disposal will not permit us to erect a building of sufficient dimensions for the accommodation of one-half the art exhibits at our command. The collections from some of the foreign countries, both of art treasures and antique relics, will be of the most interesting character, and we hope to be able to enlarge our building in such a manner as to accommodate a truly international and national art exhibit.

One hundred thousand feet of space in the main building have been designated for an agricultural hall. Forty acres of ground have been laid off for growing farms, experimental and vegetable gardens, and 40 acres of ground provided with buildings for the accommodation of live stock, poultry, birds, dogs, &c., with a half-mile stock arena, wherein sales of live stock will be permitted on stated days.

Extensive accommodations have been provided for the display of sawmills, wood working machinery, brick, tile, and other like factories in motion.

Arrangements are being perfected for an electrical or steam railway, to be operated for the accommodation of visitors, connecting with all points of interest within the grounds; arrangements are also being perfected for the extension of a trunk railroad track into the main building, by means of which exhibits from all parts of the country can be discharged within the building and visitors by rail can be deposited near the entrance.

A wharf adjoining the exposition grounds will be provided for the accommodation of exhibits and visitors arriving by steamship or steamboat.

The grounds will be embellished with six lakes and generous collections of evergreens from the United States and the Latin American countries, presenting groves of cedar, pine, pomegranate, magnolia, lemon, palm, orange, cocoanut, banana, &c.

The railroads have responded to our request for low rates on freight and passengers in the most generous manner. One hundred and sixty lines of railroads have agreed to a maximum rate on passengers of 1 cent per mile, and the excursion rate will frequently be as low as one-half and three-quarters of a cent per mile.

The facilities and arrangements for bringing the people of the United States and Canada to this exposition are both systematic and extensive.

Suitable space has been set aside and steps have been taken by the board for the organization of a department of woman's work, under the direction of leading ladies interested in opening to the women of our country an opportunity to occupy independent positions in the economy and industries of the world.

Extensive preparations have been made for a national educational display, for which we have the indorsement of the National Educational Association, composed of State and city superintendents, and the cordial coöperation of the Commissioner of Education. No subject claims greater attention on the part of our people, and the effect of this school of instruction will be to impart a healthy impulse to the cause of education and a better knowledge of methods. Already local educational societies are being organized throughout the State of Louisiana, and I am sure that the exposition will secure for the cause of education a more liberal provision from all of the backward States.

It is the desire of the management to construct a building within which may be grouped the exhibits of the respective Departments of the United States Government and the collective exhibits of the natural resources of all the States and Territories.

Aside from the manifest benefits accruing to the whole country from a better understanding between the representatives of the arts and sciences, agriculture, manufactures, and commerce, we may rejoice at the happy results flowing from an intermingling of the people of America in a grand national reunion.

The Centennial celebration at Philadelphia promoted kinder relations between all the people, stimulated the pride and interest of all citizens in the national welfare, and awakened an interest in industrial development which has found eloquent expression through the expositions of Boston, Atlanta, Louisville, Cincinnati, St. Louis, Chicago, and Denver.

We hope and believe that the good work thus begun at Philadelphia may be consummated at New Orleans: that the whole people may there celebrate the end of sectional acerbity and proclaim a new era of fraternal feeling and industrial progress.

Time, place, and circumstances combine to render this a fitting occasion for presenting to the world our wondrous resources, and to invoke the presence of foreign nations as witnesses of the unity of our people and the strength of our institutions.

Very respectfully,

E. A. BURKE,
Director-General.

LETTER OF DIRECTOR-GENERAL BURKE TO COMMISSIONER EATON.

WORLD'S INDUSTRIAL AND COTTON CENTENNIAL EXPOSITION,
WASHINGTON, D. C., May 17, 1884.

SIR: Your request for any further data touching the preparation for the World's Industrial and Cotton Centennial Exposition is received.

In addition to my report to the President I beg to say that the progress in all departments is very rapid and encouraging, and I would respectfully submit several items which may be of interest to you and the educators of the country.

Many people wonder how a large attendance can be secured to an exhibition of this character in New Orleans, so far from the centre of the population of the United States. This centre of population, it will be noticed, is almost directly north of us, and I have made computations like the following which may show the basis on which our expectations rest:

(1) The adult population of the ten States contiguous to New Orleans is as follows:

	Adults.
Texas	689, 852
Louisiana.....	431, 339
Mississippi.....	476, 866
Arkansas	343, 151
Alabama.....	541, 016
Florida.....	119, 610
Georgia.....	664, 405
South Carolina.....	426, 647
North Carolina.....	620, 731
Tennessee	674, 252

Total 4, 987, 869

Should 25 per cent. of these visit the exposition there would be 1,246,967 visitors, and if we should assume that one-half of the visitors from these States would enter twice there would be 1,870,450.

(2) Take the twelve Middle and Western States having close rail and water communication with New Orleans, namely:

	Adults.
Kentucky.....	743, 787
Ohio.....	1, 629, 447
Indiana.....	961, 597
Illinois.....	1, 506, 272
Missouri.....	1, 006, 989
Michigan.....	860, 007
Wisconsin.....	640, 078
Minnesota.....	374, 536
Iowa.....	773, 905
Dakota.....	75, 714
Nebraska.....	218, 348
Kansas.....	467, 841

Total..... 9, 258, 521

Assuming that 5 per cent. of these adults visit the exposition once, the visitors from these States would reach 462,926.

(3) Take the following eleven States and Territories, giving a total of 1,006,420 adults, and should 5 per cent. attend they would furnish 50,321 visitors:

	Adults.
New Mexico.....	59, 826
Arizona.....	26, 200
California.....	499, 825
Oregon.....	90, 477

	Adults.
Washington Territory.....	40, 167
Colorado.....	127, 273
Utah.....	61, 639
Nevada.....	41, 605
Idaho.....	19, 311
Montana.....	26, 692
Wyoming.....	13, 405

Total 1, 006, 430

(4.) Turning to the following thirteen States, having a total adult population of 9,668,627, and estimating that 2 per cent. of these visit the exposition, this attendance would aggregate 193,373:

	Adults.
Virginia.....	692, 836
West Virginia.....	273, 580
Maryland.....	471, 805
Delaware.....	75, 690
Pennsylvania.....	2, 200, 115
New Jersey.....	609, 657
New York.....	2, 868, 207
Connecticut.....	365, 918
Massachusetts.....	1, 063, 710
Rhode Island.....	162, 743
Vermont.....	192, 134
New Hampshire.....	216, 154
Maine.....	377, 620
District of Columbia.....	98, 458

Total 9, 668, 627

All will admit that these are moderate estimates and be inclined to a broader basis and one more consistent with the scope of the enterprise, which is that of a national and international exposition, with all the States and Territories interested.

Again I may call attention to transportation. All are familiar with the facilities of water communication with New Orleans, by ocean, gulf, and river. It may be added that before the opening of the exposition we shall have six railroads terminating in the city, two on the west and four on the east side of the river. Another important assurance of a large attendance is the low transportation rates already secured. These low rates, already secured by written agreements with railroad companies extending over the United States and into Canada, must exert a great influence in nationalizing the exposition.

The rate of 1 cent per mile will make the fare from—

Halifax.....	\$22 91	St. Paul.....	\$12 91
Montreal, Canada.....	17 14	Detroit.....	10 87
Boston.....	15 65	Chicago.....	9 15
New York.....	13 31	Cincinnati.....	8 25
Philadelphia.....	12 41	Louisville.....	7 41
Baltimore.....	11 43	Portland, Oreg.....	32 02
Washington.....	11 03	San Francisco.....	24 49
Richmond.....	10 45	Denver, Colo.....	15 20
Winnipeg, Manitoba.....	17 45	St. Louis.....	6 98

Proportionately low rates are made for all of the ten States contiguous to New Orleans, and reduced rates for special excursions.

The following note will give the latest information in reference to the progress of the work on the buildings:

"NEW ORLEANS, May 10, 1884.

"E. A. BURKE, *Director-General* :

"Notwithstanding the inclement weather, during the week 400,000 feet of lumber have been put in position in the main building. Seven hundred thousand feet were received. The framing of the outside section is complete. The Saint Charles street side and two-thirds of the frame elevation is sided in. The cornices are under construction. When these three are complete it only remains to set the principal trusses, of which four hundred are ready for position. The roofer has finished 80,000 feet. The outside walls are ready for the painter, who begins Monday. Glazing begins next week. Nearly six hundred men was the average during the week. The framing for Horticultural Hall is nearly complete and in position, except the large arches, which will be placed next week. The sash contract for Horticultural Hall has been awarded Warren Bros., Nashville. The glass for this building is en route.

"RICHARD NIXON, *Secretary*."

I may further add in regard to business methods that all contracts have been made on a strict business basis after public advertisement. Contract for glazing made, St. Louis; sash, Milwaukee; roofing Cincinnati; bronze ornaments, Salem, Ohio; 5,000 kegs of nails, Pittsburgh; 5,000 boxes of glass, Philadelphia; Horticultural Hall, New York City; sash Horticultural Hall, Nashville, Tenn.

The construction is under the supervision of competent architects, and every detail of expense is scrutinized by a building committee of the management.

Part of the buildings at Philadelphia were permanent and all of them were designed to comport with the sentiment of national pride then celebrated.

The centennial of cotton being commemorative of the first shipment from America of an industrial factor in the world's progress may be celebrated with less expense and display, notwithstanding the fact that it clothes a majority of the peoples of the world and has grown in production in America from six bags for export in 1784, when the world's supply was 11,250,000 pounds, in one hundred years to 3,405,070,410 pounds, or 85 per cent. of the world's crop.

As the World's Exposition at New Orleans owes its dimensions to the Centennial, it is proper that we should profit by its experience and that of other expositions in respect to grouping displays and securing results on limited expense.

I have the honor to be, very respectfully, your obedient servant,

E. A. BURKE,
Director-General.

Hon. JOHN EATON,
United States Commissioner of Education.

OFFICERS OF THE EXPOSITION.

BOARD OF MANAGEMENT.

Edmund Richardson, president, is the largest cotton planter and cotton factor in the world. Estimated worth, \$10,000,000.

Albert Baldwin, of Louisiana, vice-president, is president of the New Orleans National Bank; of the firm of A. Baldwin & Co.; president New Orleans Water Works Company.

William B. Schmidt, of Louisiana, of firm of Schmidt & Zeigler, one of the largest produce houses in the United States.

Governor R. M. Patton, of Alabama, ex-governor of Alabama, member of Centennial Commission.

Hon. Thomas Hardeman, jr., member of Congress, member of Centennial Commission.

Hon. Duncan F. Kenner, Louisiana, president New Orleans Gas Company, ex-member of tariff commission.

Jules C. Denis, Louisiana, president New Orleans Cotton Press Association.

Simon Hershheim, Louisiana, firm of S. Hershheim & Brother, largest tobacco manufacturers in the South.

Samuel H. Buck, Louisiana, cotton firm of S. H. Buck & Co., New Orleans, Henry Heintz & Co., New York.

John V. Moore, Louisiana, firm of Bickham & Moore, large cotton factors.

E. M. Hudson, Louisiana, lawyer.

G. A. Breaux, Louisiana, lawyer.

F. C. Morehead, Mississippi, president National Cotton Planters' Association of America.

ADVISORY FINANCE COMMITTEE.

Hon. W. J. Behan, mayor New Orleans, of firm of Zuberbier & Behan, large produce house; Joseph H. Oglesby, president Louisiana National Bank; Robert S. Howard, president Chamber of Commerce, New Orleans; A. J. Gomila, firm Gordon & Gomila, grain dealers; C. M. Sorla, president New Orleans Sanitary and Fertilizing Company, treasurer—died a few days ago.

EXECUTIVE OFFICERS.

E. A. Burke, director-general, State treasurer of Louisiana and manager Times-Democrat, and Samuel Mullen, secretary and chief of installation.

DEPARTMENT OF HORTICULTURE.

This is under the supervision of the committee of the Mississippi Valley Horticultural Society: Parker Earle, of Illinois; P. J. Berckmans, of Georgia; and Charles

W. Garfield, of Michigan. Parker Earle, Illinois, chief of department; Prof. W. H. Ragan, Indiana, superintendent of pomology; Prof. S. M. Tracy, Missouri, superintendent of plants and trees; Hon. P. J. Berckmans, Georgia, foreign commissioner. Appointments to all positions are made with reference to fitness and with a view of imparting a national character to the enterprise.

CLASSIFICATION OF EDUCATIONAL EXHIBITS—GROUP 8.

[Extract from general announcement.]

CLASS 801.—*Education of children, primary instruction, instruction of adults.*

Plans and models of infant schools and Kindergärten, orphan asylums and nurseries; system, management, and furniture of such establishments; appliances for instruction suitable for the physical, moral, and intellectual training of the child previous to its entering school.

Plans and models of scholastic establishments for town and country; system of management and furniture for these establishments; appliances for instruction: books, maps, charts, apparatus, and models.

Plans and models of scholastic establishments for adult and professional instruction; system of management and furniture of these establishments; appliances for adult and professional instruction.

Appliances for the elementary teaching of music, singing, foreign languages, book-keeping, political economy, practical agriculture and horticulture, technology, and drawing.

Appliances adapted to the instruction of the blind and of deaf-mutes.

Specimens of the work of pupils of both sexes.

Libraries and publications.

CLASS 802.—*Organization and appliances for secondary instruction.*

Plans and models of establishments for secondary instruction: lyceums, grammar schools, colleges, industrial and commercial schools; arrangement and furniture of such establishments.

Collections: classical works, maps, and globes.

Appliances for technological and scientific instruction and for teaching the fine arts, drawing, music, and singing.

Apparatus and methods for instruction in gymnastics, fencing, and military exercises.

Apparatus and methods for instruction in telegraphy, phonography, and stenography.

CLASS 803.—*Organization, methods, and appliances for superior instruction.*

Plans and models of academies, universities, medical schools, practical schools, technical and mechanical schools, schools of agriculture, observatories, scientific museums, amphitheatres, lecture rooms, laboratories for instruction and research.

Furniture and arrangements of such establishments.

Apparatus, collections, and appliances intended for higher instruction and scientific research.

Special exhibitions of learned, technical, agricultural, mechanical, commercial, and industrial societies and institutions, scientific expeditions.

CLASS 804.—*Printing and books.*

Specimens of typography; autographic proofs; lithographic proofs, black or colored; proofs of engravings.

New books and new editions of books already known; collections of works forming special libraries; periodical publications, drawings, atlases, and albums.

CLASS 805.—*Stationery, book binding, painting, and drawing material.*

Paper, card, and pasteboard; inks, chalks, pens, pencils, pastels; all things necessary for writing desks and offices: inkstands, copying presses, letter scales, &c.

Objects made of paper: lamp shades, lanterns, flowerpot covers.

Registers, copybooks, albums, account books, memorandum books; bindings, loose covers for books, cases, &c.

Various products used in water color painting and tinting; colors in cakes; pastels, bladders, tubes, and shells; instruments and artists' stationery.

Apparatus for the use of painters, draughtsmen, engravers, and modellers.

CLASS 806.—*General application of the arts of drawing and modelling.*

Designs for industrial purposes; designs obtained, reproduced, or reduced by mechanical processes.

Decorative paintings, lithographs, chromo-lithographs, or engravings for industrial purposes.

Models and small articulated wooden models of figures, ornaments, &c.

Carvings, cameos, seals, and various objects decorated with engravings; objects modelled for industrial purposes, produced by mechanical processes, reductions; photo-sculpture, &c., casts.

CLASS 807.—*Photographic proofs and apparatus.*

Photographs on paper, glass, wood, stuffs, and enamel; heliographic engravings; lithographic proofs; photo-lithographic proofs, photographic stereotypes, stereoscopic proofs, stereoscopes; enlarged photographs; color photographs.

Instruments, apparatus, and chemicals necessary for photography.

Materials and appliances used in photographic studios.

CLASS 808.—*Musical instruments.*

Non-metallic wind instruments, with common mouth-pieces, with reeds, with or without air reservoirs.

Metallic wind instruments, simple, with lengthening pieces, with slides, with piston, with keys, with reeds; wind instruments with key boards, organs, accordions, &c.

Stringed instruments played with the fingers, or the bow, without key boards.

Stringed instruments, with key-boards, pianos, &c; instruments played by percussion or friction; automaton instruments, barrel organs, bird organs; separate parts of musical instruments, and orchestral appliances.

CLASS 809.—*Medicine, hygiene, and public relief.*

Appliances, instruments, and apparatus requisite for anatomical and histological work.

Plastic anatomical models.

Instruments of medical research.

Apparatus and instruments for dressing wounds and for simple surgery, general and local; anæsthetic apparatus.

Surgical instruments grouped according to their purposes; instruments for amputations, resection.

Special instruments: obstetrics, ovariectomy, urinary channels, ophthalmology, dentistry, &c.; electro-therapeutic apparatus.

Apparatus for plastic and mechanical prosthesis.

Orthopedic apparatus.

Trusses, artificial limbs.

Apparatus for restoring persons apparently drowned or suffocated.

Baths and hydro-therapeutic apparatus, gymnastic apparatus for medical and hygienic purposes.

Plans and models of hospitals, various asylums, houses of refuge, almshouses, lunatic asylums; arrangements and furniture for such establishments.

Various apparatus for infirm persons, invalids, and lunatics.

Accessory objects for the medical, surgical, and pharmaceutical services in hospitals or infirmaries.

Chests and cases of instruments and medicines for military and naval surgeons; means and apparatus for succoring the wounded on the battlefield; civil and military ambulances.

Appliances, instruments, apparatus, and all things requisite for veterinary surgery.

CLASS 810.—*Mathematical and philosophical instruments.*

Apparatus and instruments used for mathematical purposes.

Apparatus and instruments illustrating practical geometry, land surveying, topography, and geodesy; compasses, calculating machines, levels, mariners' compasses, barometers.

Apparatus and instruments for measurement, verniers, micrometric screws, dividing machines, scales for scientific uses, &c.

Optical instruments, astronomical instruments.

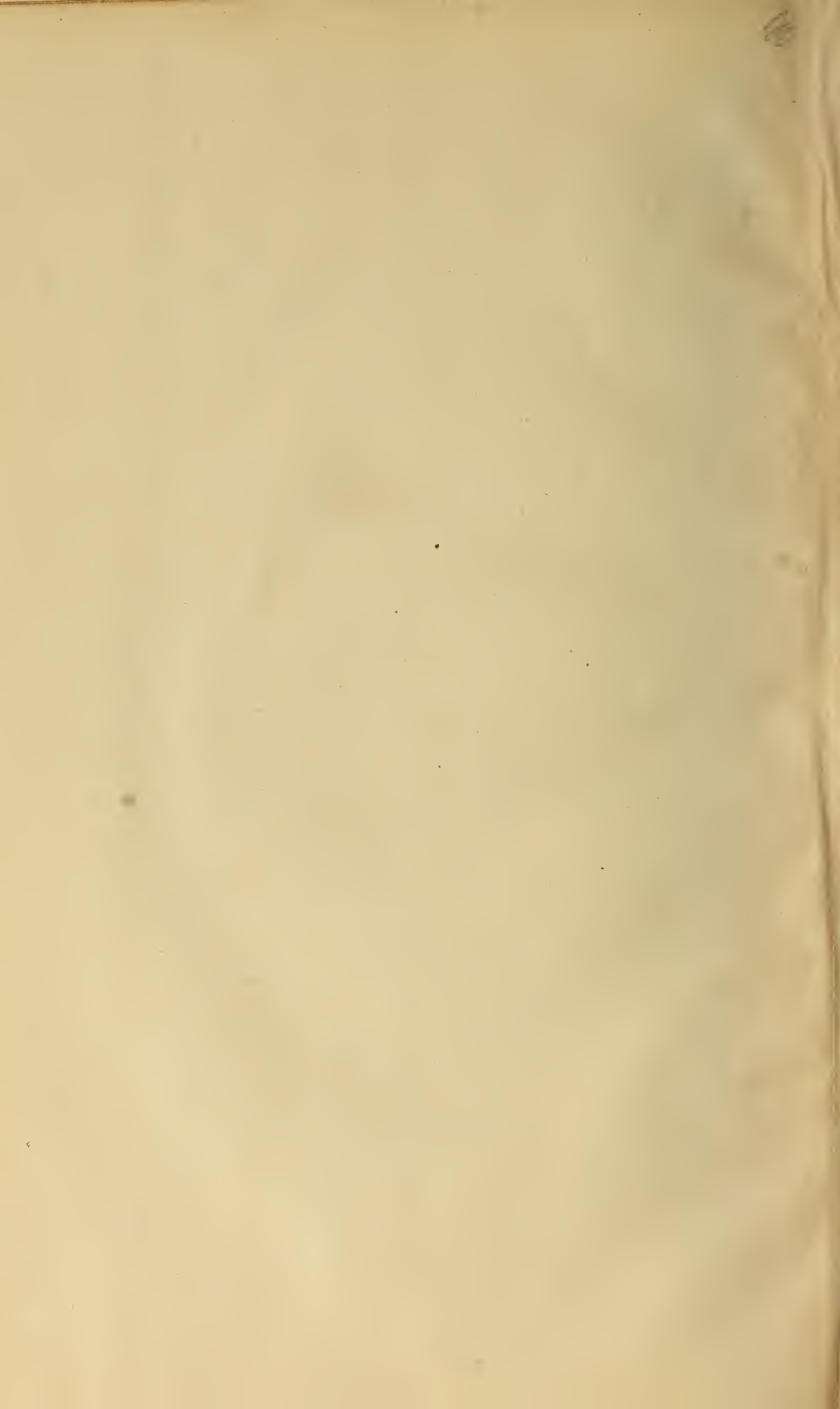
Physical and meteorological instruments.

Instruments and apparatus requisite for laboratories and observatories.
 Weights and measures of various countries.
 Coins and medals.

CLASS 811.—*Maps and geographical and cosmographical apparatus.*

Topographical, geographical, geological, hydrographical, and astronomical maps, atlases, &c.
 Physical maps of every kind; plans in relief.
 Terrestrial and celestial globes and spheres.
 Statistical works and tables.
 Tables and ephemerides for the use of astronomers and sailors.







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